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HELMER, GEORGIA L	

ART UNIT	PAPER NUMBER
1638	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/724,726	HADLACZKY ET AL.	
	Examiner	Art Unit	
	Georgia Helmer	1638	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *05 November 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *50-52 and 73-128* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *50-52 and 73-128* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/9 and 11/18/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Status of the Claims

1. The Office acknowledges receipt of Applicants' Response; dated 9 November 2005.

2. Applicant has amended claims 89, 91, 94, and 99, and new claims 114-128 have been added. Claims 50-52 and 73-128 are pending and are examined in the instant action.

3. This action is made FINAL.

4. All rejections not addressed below have been withdrawn.

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. The Office acknowledges receipt of the 37 CFR 1.132 Declaration of Steven Fabijanski dated 8 November 2005. This 37 CFR 1.132 Declaration of Steven Fabijanski is the fourth 1.132 declaration of Fabijanski in this case, the first dated 16 July 2003, the second dated 19 January 2004, the third dated 7 December 2004, Hereafter this fourth declaration is be designated "Fabijanski No.4", since it is the fourth declaration of Fabijanski in the instant case.

Note is made of Applicant's "Correction of first declaration under § 1.132 of Steven Fabijanski (Fabijanski declaration 1)".

Information Disclosure Statement

7. Initialed and dated copies of Applicant's IDS forms 1449 (9 November and 18 November, 2005) are attached to the instant Office action.

Claim Rejections - 35 USC § 112-1

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 115-128 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a new matter rejection. The rejected subject matter is "plant satellite artificial chromosome ". Applicant is invited to point out the page and line number in the specification where "plant satellite artificial chromosome "can be found. Absent such support, Applicant is required to cancel the new matter in response to this Office Action.

Claim Rejections - 35 USC § 112 Written Description

9. Claims 50-52 and 73-128 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement, for reasons of record, set forth

on pages 5-10 of the Office Action of 9 May 2005, as well as for reasons set for the below. Applicant's arguments filed 9 November 2005 have been fully considered but are not deemed persuasive. To the extent that this is a new rejection, it is necessitated by Applicant's amendments to the claims.

Applicant's claims are drawn to methods comprising introducing a satellite artificial chromosome (SATAC) into a plant cell and growing the plant cell under conditions to produce a transgenic plant (claim 92), and wherein the satellite artificial chromosome is a plant satellite artificial chromosome (claim 114). Additional dependent claims are drawn to the method wherein the plant satellite artificial chromosome is produced by introducing one or more DNA fragments into a plant cells, wherein the DNA fragment/s comprise a selectable marker, growing the cell under selective conditions to produce cells that have incorporated the DNA fragment into their genomic DNA, and selecting a cells that comprises a plant satellite artificial chromosome. Additional dependent claims are drawn to monocot plant cells, dicot plant cells, algae plant cells, tobacco, tomato, potato, petunia, wheat, rice, maize, rye, cotton, soybean, Brassica napus and lettuce. Applicant's claims are very broad in scope, including all satellite artificial chromosomes, as well as plant satellite artificial chromosomes, wherein the plant can be any plant, unspecified, or pine trees, sequoias, cacti, roses, garlic, orchids, grasses, duckweed to unicellular algae.

The genus claims are to methods of making satellite artificial chromosomes wherein the SATACs are of any organism (claims 50-52 and 73-113) or are any plant species (claims 114-128).

Applicant traverses primarily (Response, p. 24) that the Office's statement that "the instant claims are drawn to plant-functional SATACs that differ from animal SATACs at least in the presence of a plant centromere" is not accurate, asserting that the "claims are not drawn to compositions of matter but to methods of producing transgenic plants". Applicant further asserts that "although the claimed methods include introducing a satellite artificial chromosome into a plant cell, it is not correct that "a plant-functional SATACs differs from animal SATACs in at least the presence of a plant centromere'."; further stating "as is clear from the application, and further demonstrated by the first declaration of Fabijanski ... a satellite artificial chromosome need not be of the same "species" as the host cell into which it is introduced. For example a mammalian satellite artificial chromosome can be transferred into a plant cell and can be detected in cells grown in culture for at least 16 weeks following such transfer..".

Applicant continues (Response, p. 25) that "possession of satellite artificial chromosomes, and plant satellite artificial chromosomes in particular, is amply demonstrated in all three...exemplary ways" as stated in the Written Description Examination Guidelines (published in Federal Registry/Vol. 66, No.4/Friday, January 5, 2001/Notices; 1099-1111). The Guidelines state that possession may be shown in many ways, including, by (1) describing an actual reduction to practice of the claimed invention; (2) a clear depiction of the invention in detailed drawings or in structural chemical formulas or (3) any description of distinguishing identifying characteristics so long as a person skilled in the art would recognize that the inventor had possession of the claimed invention. Applicant enumerates: 1) the actual reduction to practice of a

method of producing a mouse satellite artificial chromosome in a mouse host cell (including accessions numbers of such deposited cell lines) (Response, p. 27). Applicant further asserts that, as demonstrated in Fabijanski Declaration No. 1, that the satellite artificial chromosome need not necessarily be the same "species" as the host cell into which it is introduced, citing a "a mammalian satellite artificial chromosome was transferred into a plant cell and could be detected for at least 16 weeks following transfer".

Regarding the alleged lack of requirement for the application of written description guidelines to method claims, the Examiner notes that the claimed methods of using any satellite artificial chromosome or any plant artificial chromosome each require starting materials, namely any SATAC or any plant SATAC, which have not been adequately described throughout their broad genus. Applicant's specification only demonstrates the use of a SATAC from a single mammalian species, namely mouse. No guidance has been presented regarding the characterization or isolation of SATACs from any other animal species, including unrelated animals such as reptiles, birds, insects, worms, or mollusks; or any of a multitude of plant species.

See *University of Rochester v. G.D. Searle & Co., Inc.,* 68 USPQ2d 1424,1433 (DC WNY 2003), which teaches that method claims are properly subjected to a written description rejection if the starting material required by that method is itself inadequately described.

Regarding the allegation that plant SATACs do not have any particular structural requirements, such an allegation contradicts Applicant's specification on page 16, lines

23-25, which states that "[p]lant artificial chromosomes...refer to chromosomes that include plant...centromeres", as admitted by Applicant on page 36 of the Response, second paragraph. As stated previously, plant and animal chromosomes function differently. It is unclear whether plant and animal chromosomes and centromeres have appreciable sequence conservation or any conserved domains.

Recent work suggests that there is no conservation of centromeric DNA sequences among eukaryotes. See Jiang, et al, Trends in Plant Science, 2003, Vol. 8, No. 12, pages 570-575, p. 570 first column. "Centromeres are responsible for sister chromatid cohesion and are the sites for kinetochore assembly and spindle fiber attachment, thereby enabling faithful segregation of chromosomes during cell division. Although these functions are conserved among all eukaryotes, there is no conservation of centromeric DNA sequences: different organisms have strikingly different centromeric DNAs."

Guidance in the specification has been presented for only a single species of SATAC, namely the single animal species of mouse. Furthermore, Applicant admits that SATACs of another type of animal, namely insects, "refer to chromosomes that include...insect centromeres" (see page 16 of the specification, *Ibid.*) Applicant has not provided any other species of the genus, namely any SATAC from any other animal species or from any plant species, or its structural features (i.e. sequence). Since Applicant has not provided any structural features of more than one species belonging to the claimed genus, Applicant has not demonstrated any structural features which are conserved throughout the genus of any SATAC (animal or plant) and which are

correlated with function, as required by Lilly and the Written Description Guidelines cited previously.

Regarding the presumed validity of patented claims of similar scope, the Examiner notes that parent patents 6,025,155 and 6,077,697 were both deemed allowable in a Notice of Allowability mailed in August 1998. Applicant is respectfully reminded that the Written Description Guidelines were not published in the Federal Gazette until January 2001. The instant Examiner is bound to subject all pending patent applications to the current legal standards. For this reason, the instant Office action, which contains a written description rejection not applied in the allowed parents, has been reviewed and signed by the Group Director of Technology Center 1600.

However, the case for a plant satellite artificial chromosome is not persuasive, see Office Action mailed 22 October 2003, p. 18. "[T] he declaration is lacking any teaching of [a method of producing] a plant SATAC, a plant SATAC in a plant cell, a plant SATAC in a plant, or a plant SATAC in an animal cell." Note the final ¶, (No. 27) as hereby restated: The declaration of Fabijanski fails to provide any identifiable components of a plant SATAC as claimed. Even after consideration of the declaration, one would not be reasonable apprised of what components make up a plant SATAC.

Applicant's results showing "a portion of the nuclei isolated following protoplasts fusion contained mouse major satellite DNA", "SATAC material ...still present in Arabidopsis protoplasts after 8 weeks in culture', and "FISH analysis ...of...the same Arabidopsis cultures 16 weeks post-fusion demonstrated the presence of satellite artificial chromosome material" (Fabijanski Declaration No. 1, p. 6) give no information

about specifically what satellite artificial chromosome material is found at the 8 and 16 week timepoints. More importantly, no location information of the satellite artificial chromosome material is given. For example, the plant nucleus is "full" of nucleic acids, DNA and RNA, and the incoming or heterologous nucleic acid could be integrated anywhere in the genomic DNA. Furthermore, the size of any incoming or heterologous nucleic acid sequence remaining over the aforementioned time periods is unspecified, and could be any size large or small, as well as containing fragments of sequences, large or small. The persistence of an unspecified quantity of nucleic acid in culture over time gives no information re the possible function or integrations site(s) of such nucleic acids.

Thirdly, Applicant further asserts that the specification depicts the structures of SATACs schematically in Figures 2 and 3 of the specification (Response, p. 27). Figures 2 and 3 show schematics of complex macromolecular pathway starting with mouse chromosome #7 being transfected with foreign DNA, which DNA is described as specific λ DNA. The other components are macromolecular complexes, comprising for example heterochromatin and euchromatin. Applicant further suggests that the Office's response is just a statement without any explanation of why the figures are unpersuasive.

Applicant's traversal is unpersuasive. Referring to the 3 Figures accompanying Fabijanski Declaration No. 4, entitled: Figure 1, FISH analysis of a chromosome spread from a callus line produced after transfection of tobacco protoplasts with vector and targeting DNA. Figure 2, chromosome spread from a callus line produced after

transfection of tobacco protoplasts with vector and targeting DNA analyzed by DAPI-staining and FISH analysis. And Figure 3, Image analysis overlaps of high-magnification view of FISH analyses of chromosome spreads from a callus line produced after transfection of tobacco protoplasts with vector and targeting DNA. The relationship of the specifics of specification figures 2 and 3 with those of the Fabijanski figures 1, 2 and 3 is not apparent. Applicant needs to provide a detailed correlation, which includes the indicated identified areas of the various panels of the Fabijanski figures. For example, where and what are "sausage chromosomes", "stable megachromosomes" and "gigachromochromes"? Without such information, the Office is unable to evaluate these figures.

It is acknowledged that the Fabijanski Declaration No. 4 appears to demonstrate the isolation of plant SATACs comprising centromeres from a single plant species, namely tobacco. However, the Declaration utilized tobacco genomic sequences which were submitted in 1996, after the effective filing date of the instant application. The Written Description Guidelines mandate that the specification provide adequate written description as of its own filing date. It is also noted that the Fabijanski Declaration No. 4 does not provide any sequence information regarding which tobacco sequences were actually conserved in the SATAC produced from the tobacco genomic sequences. Thus, Applicant has not provided any structural features of a second species of the claimed genus, even if said second species were reduced to practice using only information provided by the instant specification. Such structural features, namely sequence information, would be required to demonstrate the conservation of any

sequence domains between the two species, namely mouse SATAC and tobacco SATAC, which would be correlated with function, in order to satisfy the requirements of *Lilly* and the Written Description Guidelines cited previously.

Claim Rejections - 35 USC § 112.1 Enablement

10. Claims 50-52 and 73-128 are rejected under 35 U.S.C. 112, first paragraph, for reasons of record. This rejection is repeated in part for reasons of record as set forth in the Office Action mailed 22 October 2003 on pages 6-8. Furthermore, the Examiner now relies upon Ohgawara et. al. (1983) and Potrykus (1990) to demonstrate the unpredictability inherent in liposome-mediated plant transformation (claims 52, 75,82, 102, 109 and 124); and in plant transformation and maintenance of the exogenous DNA in plants as generally claimed, particularly in monocots (claims 88-91, 94, 98-99 and 120-121).

Ohgawara, et. al., (1983) studying liposome-encapsulating plasmid DNA by plant protoplasts and the molecular fate of foreign DNA, found variations in DNA uptake among protoplasts from different plant species (p. 145 Abstract). In fact, after one week in culture, in only one plant, D. carota (carrot) was even a trace amount of plasmid DNA detected (p. 147, column 2, top ¶).

Potrykus (1990), reviewing gene transfer to cereal plants (monocots), teaches the general recalcitrance of monocots to transformation; and discusses the variability relating to gene transfer, considers the biology of gene transfer, saying that a transgenic plant can only result from integrative transformation in a totipotent cell or a cell that has clonal connection to the "germline". Issues of concern here are (1) Not all plant cells

are totipotent. (2) Plant cells differ in their capacity to respond to triggers, a phenomenon termed *competence*. (3) Cells from which it is hoped to regenerate transgenic plants must be competent for both regeneration (in a broad sense) and integrative transformation. (4) Plant tissues are composed of cells competent for many different responses. Considering the two states of competence essential for recovery of transgenic plants the following situation has to be considered: a/ A very small minority of cells in plant tissues will be competent for both transformation and regeneration. b/ Others will be competent for transformation or regeneration. c/ A large fraction of the cell population will be potentially competent, meaning that given the correct treatment they will have the potential to shift to the competent state. d/ A variable proportion of cells will not even be potentially competent, but will be non-competent. (5) The relative composition of cell population in tissues is determined by the genotype, the type of organ, the developmental state of the organ, and even the individual history of the experimental plant (p. 538, column 1, bottom ¶).

Of 23 different plant transformation techniques, only two, direct gene transfer into protoplasts and microprojectile bombardment, have shown any promise in either producing transformed monocot cells, whole transformed monocot plants, or transformed offspring (see pages 536-537). As the claims broadly read on any transformed plant of any of a multitude of unrelated species; and since particularly claims 88-91, 94, 98-99 and 120-121 read on a multitude of recalcitrant monocotyledonous species; the specification does not provide any teachings of plant

transformation of any species, which would be required to overcome the evidence of unpredictability inherent in obtaining transformed plant cells as claimed.

Microinjection (as claimed in claims 52, 76, 83, 103, 110 and 125) uses microscopic devices to deliver DNA to defined cells in such a way that the infected cell survives and proliferates. Transfer to structures of more than one cell can only produce transgenic chimeras, and transgenic offspring can only be expected if the transgenic sector contributes to the floral meristems, so that no transgenic offspring have been produced (p. 541, column 1, middle ¶).

Applicant's arguments filed 9 November 2005 have been fully considered but are not deemed persuasive. Applicant urges that prior Fabijanski declarations have demonstrated the successful function of "cationic lipid-mediated transfection" or cell fusion to transfer SATACs to plants, that Ohgawara et al did in fact report successful initial transfer of foreign DNA using liposomes, that the allegations of unpredictability by Potrykus have been refuted by later developments in the art, as evidenced by references appended to the Response of 9 November 2005, and that Applicant's autonomously dividing SATACs do not require genomic integration.

The Examiner maintains it is unclear whether "cationic lipid-mediated transfection" as utilized in the prior Fabijanski declarations is the same as "lipid-mediated transfection" as instantly claimed, or whether the instant specification provides enabling support for either. Furthermore, rapid degradation of foreign DNA molecules reported by Ohgawara et al would be a concern for the instantly claimed invention. The

Examiner has previously cited evidence of the unpredictability inherent in the function of artificial chromosomes. Since Applicant has only provided guidance for a single species, namely a mouse SATAC, undue experimentation would have been required by one skilled in the art to develop a multitude of SATACs from a multitude of non-exemplified animal and plant species, and to evaluate the persistence of these SATACs in plant cells following lipid-mediated transfection or any other means.

Regarding the references cited by Applicant, it is noted that said references support the Examiner's position that "direct DNA transfer" is the "most efficient" technique (see page 47 of the Response, bottom paragraph), as originally stated by Potrykus. The Examiner also notes that the Fabijanski Declaration Nos. 3 and 4 relied upon direct DNA transfer, i.e. "PEG-mediated transfection" (see page 4, top paragraph of Declaration No.3; page 4, bottom paragraph of Declaration No. 4).

Furthermore, Applicant's own specification, and not the prior art, must provide the enabling aspects of their claimed invention. Applicants' own specification is completely silent with regard to either monocot transformation or the particularly claimed transformation methods.

See Genentech, Inc. v. Novo Nordisk, A/S, 42 USPQ2d 1001, 1005 (Fed. Cir. 1997), which teaches that disclosure of a "mere germ of an idea does not constitute [an] enabling disclosure", and that "the specification, not the knowledge of one skilled in the art" must supply the enabling aspects of the invention.

Regarding Applicant's allegations of the lack of a requirement for genomic integration of autonomously replicating SATACs, the Examiner maintains that the

disclosure of a single species of SATAC does not provide enablement of the broadly claimed genus, as discussed previously.

Applicant further argues that the disclosure of methods of obtaining SATACs, as set forth in the instant specification, is sufficient for the enablement of claims broadly drawn to any SATAC from any animal or plant species. Applicant is directed to *Bayer v. Housey* below:

> An assay for *finding* a product is not equivalent to a positive recitation of *how to make* a product. Alternatively, disclosure of a method for producing a product does not reduce to practice the product itself. See *Bayer v. Housey*, 68 USPQ2d 1001, 1008-1009 (Fed. Cir. 2003): "processes of identification and generation of data are not steps in the manufacture of a final [drug] product".

Applicant's arguments filed 9 November 2005 have been fully considered but are not deemed persuasive. Applicant largely refers to the Fabijanski declaration of 9 November 2005, and the Fabijanski Declaration dated 7 December 2004 (Fabijanski No. 3).

The declaration of Fabijanski dated 9 November 2005 (Fabijanski Declaration 4) has been carefully considered and is unpersuasive. The Office Action mailed 9 May 2005 discussed Fabijanski Declaration 3, as repeated in part below:

Fabijanski Declaration 3 describes generation of whole plants containing a SATAC (Declaration p. 3) by the following steps:

(1) construction of heterologous DNAs—

(a) Vector pAgIIa, a vector containing a region of homology to tobacco pericentric DNA,(the central AT-rich region of a tobacco rDNA intergenic spacer capable of amplification) as well as a detection marker containing mouse satellite DNA , and

(b) a second DNA, the "targeting DNA" containing a region of homology to pericentric DNA sequences (a 1.7 Kb portion of the 26S rDNA coding region);

(2) introduction of the DNAs into plant cells and selection—

(c) by introduction of Vector pAgIIa DNA and "targeting DNA" into tobacco protoplasts using transfection, followed by culture of plant tissue microcalli under selective antibiotic conditions.

(3) Identification of amplified DNA molecules;

(4) Regeneration of transgenic plants containing SATACs

(5) Generation of transgenic plants containing SATAC by cell fusion using interspecific fusion of SATAC-containing N. tabacum protoplasts with protoplasts of N. glauca (Declaration 3. p. 5-7).

The Declaration of Fabijanski (Fabijanski Declaration 3) provides information of the production of a plant SATAC, and the production of transgenic tobacco plants containing the plant SATAC. However the method of Fabijanski, as set forth in Fabijanski Declaration 3, is not supported by the specification as of the date of filing. Fabijanski employs information and biological materials not available as of the earliest date of filing, namely April 1996. Fabijanski employs DNA sequences (Genebank X76056) not available until 27 September 1996 at the earliest. See Genebank accession number Y08422 (Applicant's IDS of 6 January 2005). Borisjuk et. al. (Plant Mol Biol 35, 655-660, 1997), also cited by Applicant's IDS of 6 January 2005, provides information relating to the tobacco rDNA intergenic spacer regions capable of

amplification, which Fabijanski used. Borisjek et. al. provided the information relating to the homology to tobacco pericentric sequences.

The Fabijanski Declaration No.4 refers to several Figures: 1-3, which accompany the Declaration. These figures are entitled: Figure 1, FISH analysis of a chromosome spread from a callus line produced after transfection of tobacco protoplasts with vector and targeting DNA; Figure 2, chromosome spread from a callus line produced after transfection of tobacco protoplasts with vector and targeting DNA analyzed by DAPI-staining and FISH analysis; and Figure 3, Image analysis overlaps of high-magnification view of FISH analyses of chromosome spreads from a callus line produced after transfection of tobacco protoplasts with vector and targeting DNA. The Declaration concludes (p. 10) that "by following the teachings of the specification and employing standard methods as described herein, a plant satellite artificial chromosome can be generated and selected within a cell."

The Declaration of Fabijanski (Fabijanski Declaration 4) provides information of the production of a plant SATAC from a single plant species, and the production of transgenic tobacco cells containing the plant SATAC. However the method of Fabijanski, as set forth in Fabijanski Declaration, is not supported by the specification as of the date of filing, as discussed in the Office Action of 9 May 2005, repeated in part below:

Fabijanski employs information and biological materials not available as of the earliest date of filing, namely April 1996. Fabijanski employs DNA sequences (Genebank X76056) not available until 27 September 1996 at the earliest. See

Genebank accession number Y08422 (Applicant's IDS of 6 January 2005). Borisjuk et. al. (Plant Mol Biol 35, 655-660, 1997), also cited by Applicant's IDS of 6 January 2005, provides information relating to the tobacco rDNA intergenic spacer regions capable of amplification, which Fabijanski used. Borisjek et. al. provided the information relating to the homology to tobacco pericentric sequences.

The Office has maintained that the declarations are not supported by the specification as of the date of filing.

Applicant traverses referring to Exhibits A and B, which are "print-outs from PubMed" relating to revision history of Genebank accession numbers X76056 and Y08422 and (Response, p. 49). Applicant cites the tobacco rDNA intergenic spacer sequence to which the 334 bp sequence of pAg11a has homology as being X76056, saying "this sequence is for the rDNA intergenic spacer of Nicotiana sylvestris and is very closely related (approximately 87% sequence identity) to that of the rDNA intergeneric spacer sequence of Nicotiana tabacum (discussed in the Borisjuk et al reference which corresponds to accession no. Y08422...)".

Applicant's traversal is unpersuasive. Accession number Y08422 is the rDNA intergeneric spacer sequence of Nicotiana tabacum (discussed in the Borisjuk et al reference). The Borisjuk reference (Plant Molecular Biology, vol 35, pages 655-660, 1997) was publicly available as of no earlier than November 1997. See SpringerLink printed out 3/3/06- References.

The Y08422 was first available on NCBI on 27 September 1996. However Applicant did not use Y08422; rather Applicant used a different DNA sequence (87%sequence identity) with 76056, the present sequence of which was updated by Genebank as of 17 October 2002 (see Exhibit A). The pre-revision sequences have defects, mistakes and corrections.

Borisjuk et al, provide specific information re the specific tobacco rDNA intergenic spacer, which they characterized as being clearly amplified/amplifiable in nature. The DNA sequence of Y08422 is that which Borisjuk et al correlates with amplification in nature. The information of Borisjuk et al, 1997, is what was needed to select the appropriate DNA sequence for amplification of pericentric DNA. This information was available as of November 1997. The appropriate choice of which pericentric DNA to use for amplification couldn't be made without the Borisjuk et al 1997 information.

Furthermore, the Fabijanski Declaration 4 (p. 3) states "[a] 334 bp sequence with homology to tobacco pericentric sequence (Genebank..Y08422,..)...was constructed, containing the central AT-rich region of a tobacco rDNA intergenic spacer capable of amplification...and incorporated into the vector".

Again it was not until the Borisjuk et al, 1997 that the information about the spacer regions which are "naturally amplifiable " was available.

Fabijanski Declaration No. 4 concludes (p. 10) that "the description of a plant satellite artificial chromosome provided in the [instant] application closely correlates with an actual physical embodiment of the artificial chromosome such that I and other scientists involved in the work were readily able to identify a plant satellite artificial

chromosome and distinguish it in a background of plant chromosomes based on the description in the application".

Claim Rejections - 35 USC § 102

11. Claims 50, 51, 52, 73, 80, 88-92, 94-96, 98-100, and 107 remain, and new claims 114, 117-118, and 120-122 are anticipated by Richards et. al. (US 5,270,201, issued 14 December 1993), as set forth in the Office Action mailed 9 May 2005, repeated in part below.

The instant claims are drawn to a method for producing a transgenic plant comprising introducing a satellite artificial chromosome (SATAC) into a plant cell and growing the plant cell under conditions to produce a transgenic plant.

Richards et. al. teach a method of making an artificial plant chromosome (column 33, Example 19 and Figure 10(C)), using it to transform plant cells (column 7, lines 3-6), regenerating a whole plant (column 10, lines 34-37), wherein the plant cell is a protoplast (column 10, lines 35-36), wherein the artificial chromosome encodes a gene product (column 10, lines 53-56), wherein the artificial chromosome is introduced by direct DNA transfer (column 7, lines 3-6), and wherein the plant cell is from a monocot, a dicot or an algae (column 10, 34-38).

The prior art herbicide resistant form of a normally occurring enzyme is a heterologous encoded gene product.

Accordingly, Richards et. al. anticipate the claimed invention.

Applicant traverses primarily that "[n]o where in Richards et al. is a satellite artificial chromosome disclosed or is a method of making such an artificial chromosome through amplification of heterochromatin or by any other means. No where in Richards et al is an artificial chromosome that is predominantly heterochromatin disclosed. As such, it is readily apparent that Richards et al cannot anticipate the claimed methods of producing a transgenic plant which include a step of introducing a satellite artificial chromosome into a plant cell" (Response, p. 52).

Applicant's traversal is unpersuasive. The instant claims, especially claim 92, the single independent claim, are not drawn to a method of making an artificial chromosome through amplification, nor are these claims drawn to an artificial chromosome which is predominantly heterochromatic.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., to a method of making an artificial chromosome through amplification, to an artificial chromosome which is predominantly heterochromatic) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Remarks

12. No claims are allowed.

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Georgia Helmer whose telephone number is 571-272-0796. The examiner can normally be reached on 10-6 Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anne Marie Grunberg can be reached on 571-272-0975. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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9 March 2006

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